

⁽¹²⁾ UK Patent Application ⁽¹⁹⁾ GB ⁽¹¹⁾ 2 284 290 ⁽¹³⁾ A

(43) Date of A Publication 31.05.1995

(21) Application No 9116271.9

(22) Date of Filing 27.07.1991

(71) Applicant(s)
Michel Flor-Henry
114 Dunstan Street, Netherfield, Nottingham,
NG4 2NZ, United Kingdom

(72) Inventor(s)
Michel Flor-Henry

(74) Agent and/or Address for Service
Michel Flor-Henry
114 Dunstan Street, Netherfield, Nottingham,
NG4 2NZ, United Kingdom

(51) INT CL⁶
G08G 1/00, G07B 1/08

(52) UK CL (Edition N)
G4Q QCB
G4T TAE

(56) Documents Cited
None

(58) Field of Search
UK CL (Edition N) G4Q QCB , G4T TAE TAX
INT CL⁵ G07B , G08G

(54) Vehicle identifier.

(57) A hand held unit with an electronic autofocusing camera and associated optical image recording and data processing facilities, which when pointed at car registration plates and clicking on, for instance, will record the car identity, time and position within a metered walk for comparison with previously stored data for the purposes of giving a rapid indication of non-compliance with parking regulations.

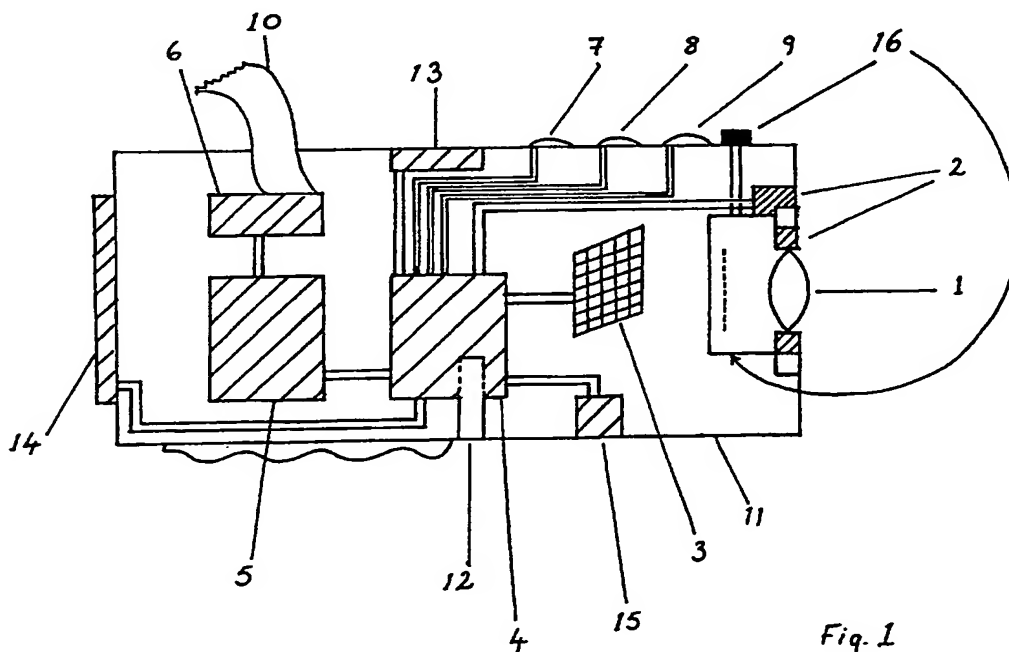
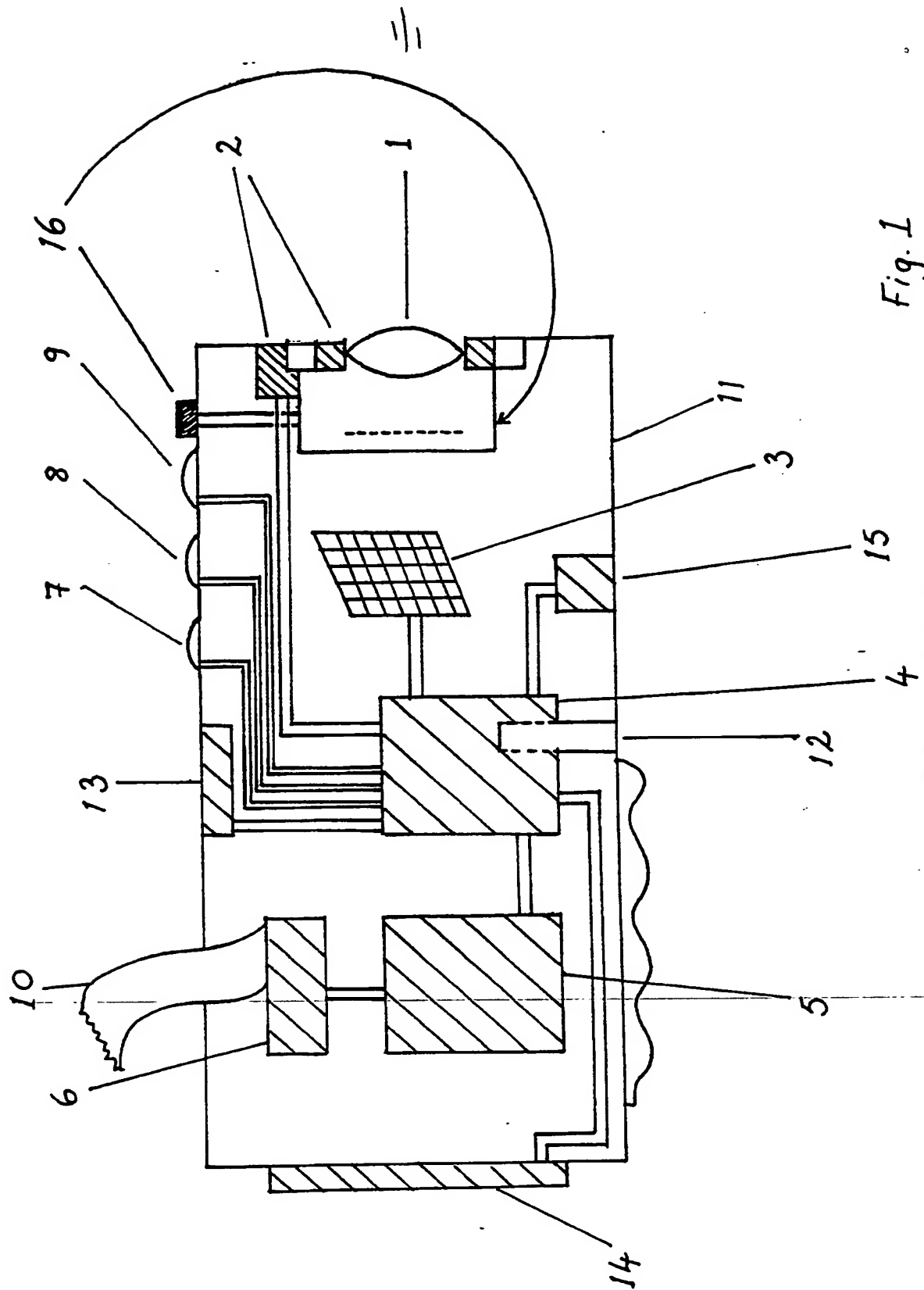


Fig. 1

Document AU
Carpenter, Timothy Guy
U.S. Serial No. 10/525,786

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

GB 2284290 A



BEST AVAILABLE

VEHICLE IDEN

2284290

This invention relates to a hand held vehicle registration plate identifier.

Vehicle registration plates (hereinafter referred to as number plates) are the relevant identifying features which traffic wardens or similar personnel log for assessing infringement of local parking regulations.

The assessment of infringement or adherence to parking regulations is a very labour intensive and time consuming procedure in which the operative must manually note the number plate and the time of parking at that location and subsequently check whether it remains at that location after the allowable period.

According to the present invention there is provided a unit which is ideally hand held (a hand held unit only) but which may also be embodied as a hand held unit which communicates via wiring to a shoulder bag-mounted central processing facility (or via radio frequency to such a shoulder bag mounted processing unit or to a remotely located facility eg within a nearby vehicle) which optically acquires an image of a number plate, reducing the image by data processing procedures to the alpha-numeric information content of the number plate only if necessary, which in conjunction with internal clock facilities and internal memory thus data logs the number plate information and the time of the number plate image acquisition.

At a subsequent time when the number plate is re-entered by optical image acquisition, if the time of acquisition falls outside an allowable time limit enforceable in the local parking regulation (whose particulars can be entered manually into the unit either via a key-pad or by the selection of one of a variety of customised plug in PROMS) the unit indicates a fault or "Penalty" situation and a visual display on LCD (for example) of the offence is provided with an automatic printout of the same which may itself constitute a parking violation ticket or form part thereof &/or provide a documentary record of the offence for the parking violation records.

A specific embodiment of the invention will now be described with reference to the accompanying schematic drawing.

Figure 1 shows in schematic form the elements of the unit:

Referring to the drawing the unit comprises a light tight enclosure and chassis 11 which contains and supports an imaging lens system comprising a lens of suitable field of view 1, suitably high speed autofocus assembly,2, communicating to the central processing unit,4, in conjunction with image sensor (area type CCD or linear array or similar),3, image data processing and reduction for storage and retrieval of maximum number plate information with minimum memory requirements and minimum speed of retrieval (for instance in one approach by minimal pixel map representation of the data and by other conventional data compression techniques) in central processing unit,4, including as disk or diskette derived software routines or hardwired (e.g. PROM) embodied routines for image abstraction and analysis and storage in storage medium,5, which may be disk or diskette or some other form of solid state memory or storage medium refreshable and erasable for subsequent pattern retrieval and matching via above routines available to the CPU.

Local rules or operating routines enforceable in a specific area can be input via custom hard-wired PROMS inserted into unit as occasion demands,12, and/or specific local information or other data entry may also be input via alphanumeric keypad,14.

Pattern matching of number plates is achieved by CPU and associated software embodied within the processor as disk or diskette accessible files and routines or available to the processor from dedicated custom PROMS, both for the purposes of image analysis, reduction and comparison and for the purposes of indexing to digital indication of location provided by a digital pedometer,15, derived "footstep" index which in the appropriate "footstep index" mode relates the number plate data acquired to a location in a pedometer metered "walk" as well as to a time of data acquisition, and thus provides an indication of location in space.

Data is therefore logged on the basis of

- 1) alphanumeric identity
- 2) time of acquisition
- and if required,
- 3) position within a metered "walk".

A datum entry via re-acquisition of the same number plate which indicates a parking regulations violation via pattern matching to a previously recorded entry falling outside an allowable time segment (or other related parameter, which may be entered as required by the traffic operative through the keypad,14, or PROM,12,) is automatically logged as an offence and recorded as such, and may be displayed as such on LCD,13, and printed out,10, for instance with a dedicated thermal type printer or other printing means,6.

5 represents data storage system if distinct from CPU
7,8,9 indicate visible light emitting diodes which may be replaced by or accompanied with audio tone or voice synthesized indications and cues for:

BEST AVAILABLE COPY

(for example): 7, Image not decodable; try again or log data manually

8, Parking regulations offence

9, Parking regulations observed.

16, *Electronic exposure metering and shutter release.*

CLAIMS:

1 A hand-held number plate data logger which comprises a light tight enclosure and chassis supporting a suitable field of view lens and high speed autofocus system together with area type array or similar suitable image detector communicating to data processing and storage and retrieval units for the purposes of comparing the presence or absence of number plates at a specific location or within a designated area within a designated time period considered as the "allowable time period", where pattern matching outside the allowable time period (constituting a parking regulations infringement) is automatically logged as a disallowed match and where the offence is indicated to the operator through the agency of visible and or audio cues and indicating means, which may include LEDs, tone generators, speech synthesizers and automatic issuing of documentation, eg parking offence tickets.

2 A hand-held unit as claimed in claim 1 above, wherein the unit comprises merely the optical input means, data processing being undertaken by a remote unit, eg shoulder bag pack in communication with the hand-held optical unit via wiring or via r.f. or where the processing unit is situated within a vehicle and is in communication with the hand-held optical data input means via r.f.

3 A hand-held unit as claimed in claims 1 and 2 above wherein a digital pedometer is incorporated within the hand-held unit itself (or digitally encoded pedometric information is communicated to the unit from a remote sensor(s))to provide a correlation index for position to which number plates and their times of recording can be placed approximately within a "walk" corresponding to the "beat" of a parking regulations warden.

4 A hand-held unit as above in which the various elements of image acquisition, data processing, digital pedometer recording are physically separate but functionally linked eg via wiring &/or r.f.

5 A hand-held unit as above in which PROMS to implement universal image processing routines or locally relevant routines for local regulations can be input.

6 A hand-held unit as above in which documentation may be automatically issued, for example in the instance of a parking regulations infringement.

7 A unit or units performing substantially as described above but which are vehicle mounted.

8 A number plate data logger substantially as described herein with reference to Figure 1 of the accompanying drawing.

REST AVAILABLE C

Patents Act 1977**Examiner's report to the Comptroller under
Section 17 (The Search Report)**

Application number

GB 9116271.9

Relevant Technical fields(i) UK Cl (Edition K) G4Q (QCB)
G4T (TAE TAX)(ii) Int Cl (Edition 5) G08G
G07B**Search Examiner**

M J DAVIS

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

28 OCTOBER 1992

Documents considered relevant following a search in respect of claims 1-8

| Category (see over) | Identity of document and relevant passages | Relevant to claim(s) |
|------------------------|--|-------------------------|
| | NONE | |

| Category | Identity of document and relevant passages - 6 - | Relevant to cla |
|----------|---|---|
| | | <p style="writing-mode: vertical-rl; transform: rotate(180deg);">BEST AVAILABLE COPY</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">BEST AVAILABLE COPY</p> |

Categories of documents

Document indicating lack of novelty or of inventive step.

Document indicating lack of inventive step if combined with one or more other documents of the same category.

Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).